

WHAT IS CLAIMED IS:

1. A method of providing biological analyses to a remote client; said method comprising:
 - 5 maintaining a sample archive comprising a plurality of discrete sample nodes;
receiving a request for a biological analysis from a remote client; said request comprising identification of a selected sample node from said plurality of discrete sample nodes and identification of a selected
10 assay;
responsive to said receiving, retrieving said selected sample node from said archive and preparing said selected assay; and
performing said selected assay for said selected sample node.
 2. The method of claim 1 further comprising transmitting results of said performing
15 and data representative of said performing to said remote client.
 3. The method of claim 1 further comprising shipping said selected sample node to said remote client.
 4. The method of claim 1 wherein said request is received via a network connection.
 - 20 5. The method of claim 1 wherein said assay is a genomics experiment.
 6. The method of claim 1 wherein said assay is a proteomics experiment.
 7. The method of claim 1 wherein said retrieving said selected sample node comprises interrogating a database.
 8. The method of claim 1 wherein said retrieving said selected sample node
25 comprises utilizing an optical sensor.
 9. The method of claim 1 wherein said retrieving said selected sample node comprises automatically operating a sample node removal device.
 10. The method of claim 9 wherein said sample node removal device comprises a laser.

11. The method of claim 9 wherein said sample node removal device comprises a mechanical clipping tool.
12. The method of claim 1 further comprising washing said sample prior to said performing.
- 5 13. The method of claim 2 wherein said transmitting results comprises encrypting said results and said data.
14. A method of providing samples to a remote client; said method comprising:
- maintaining a sample archive comprising a plurality of discrete sample nodes;
- 10 receiving a request for a sample from a remote client;
- responsive to said receiving, identifying a selected one of said plurality of discrete sample nodes in said archive; said selected one of said plurality of discrete sample nodes carrying said sample;
- retrieving said selected one of said plurality of sample nodes from
- 15 said archive; and
- shipping said selected one of said plurality of sample nodes to said remote client.
15. The method of claim 14 further comprising performing an analysis of said sample prior to said shipping.
- 20 16. The method of claim 15 further comprising transmitting results of said performing and data representative of said performing to said remote client.
17. The method of claim 14 wherein said shipping comprises packaging said selected one of said plurality of sample nodes in a sample container.
18. The method of claim 14 further comprising washing said selected one of said
- 25 plurality of sample nodes prior to said shipping.
19. The method of claim 14 wherein said request is received via a network connection.
20. The method of claim 14 wherein said identifying comprises interrogating a database.

21. The method of claim 14 wherein said retrieving comprises utilizing an optical sensor.
22. The method of claim 14 wherein said retrieving comprises automatically operating a sample node removal device.
- 5 23. The method of claim 22 wherein said sample node removal device comprises a laser.
24. The method of claim 22 wherein said sample node removal device comprises a mechanical clipping tool.
25. The method of claim 15 wherein said analysis is a genomics experiment.
- 10 26. The method of claim 15 wherein said analysis is a proteomics experiment.
27. A system comprising:
- 15 a sample archive comprising a plurality of sample carriers; each of said plurality of sample carriers configured to support a plurality of discrete sample nodes;
- 15 a database containing data records associated with ones of said plurality of discrete sample nodes and data records associated with biological analyses;
- 20 means for receiving a request from a remote client; said request containing information related to performing a selected analysis with selected ones of said plurality of discrete sample nodes;
- 20 a processor responsive to said means for receiving and operative to retrieve selected ones of said data records from said database;
- 25 a sample retrieval apparatus responsive to said processor and operative to retrieve said selected ones of said plurality of discrete sample nodes;
- 25 an assay preparation apparatus responsive to said processor and operative to prepare an assay in accordance with said selected analysis; and

means for conducting said selected analysis with said selected ones of said plurality of discrete sample nodes and for providing results of said selected analysis to said processor.

- 5 28. The system of claim 27 further comprising means for packaging said selected ones of said plurality of discrete sample nodes for shipping to said remote client.
29. The system of claim 27 wherein said sample retrieval apparatus comprises a sample carrier locator operative to detect a location of selected ones of said one or more sample carriers.
- 10 30. The system of claim 29 wherein said sample carrier locator comprises an optical sensor.
31. The system of claim 27 wherein said sample retrieval apparatus comprises a sample node removal device operative to remove said selected ones of said plurality of discrete sample nodes from said plurality of sample carriers.
- 15 32. The system of claim 31 wherein said sample retrieval apparatus further comprises an optical sensor.
33. The system of claim 32 wherein said sample node removal device is responsive to signals transmitted from said optical sensor.
34. The system of claim 31 wherein said sample node removal device comprises a laser.
- 20 35. The system of claim 33 wherein said sample node removal device comprises a laser and a mechanical positioning system operative to position said laser relative to said selected ones of said plurality of discrete sample nodes responsive to said signals.
- 25 36. The system of claim 31 wherein said sample node removal device comprises a mechanical clipping tool.
37. The system of claim 33 wherein said sample node removal device comprises a mechanical clipping tool and a mechanical positioning system operative to position said mechanical clipping tool relative to said selected ones of said plurality of discrete sample nodes responsive to said signals.
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38. The system of claim 31 wherein said sample node removal device comprises a respective transceiver incorporated in each of said plurality of discrete sample nodes.
39. The system of claim 27 wherein said selected analysis is a genomics experiment.
- 5 40. The system of claim 27 wherein said selected analysis is a proteomics experiment.
41. A computer readable medium encoded with data and computer executable instructions; said data and instructions causing an apparatus executing said instructions to:
- 10 receive a request from a remote client for performing a selected analysis of a selected sample node maintained on a sample carrier in a sample archive;
- retrieve data records associated with said selected sample node and said selected analysis from a database;
- 15 retrieve said selected sample node from said sample carrier;
- prepare an assay in accordance with said selected analysis; and
- conduct said selected analysis of a specimen carried on said selected sample node.
42. The computer readable medium of claim 41 further encoded with data and
- 20 computer executable instructions and further causing an apparatus to provide results of said selected analysis and data related to said selected analysis to said remote client.
43. The computer readable medium of claim 41 further encoded with data and
- 25 computer executable instructions and further causing an apparatus to transmit control signals to a sample carrier retrieval device operative to retrieve said sample carrier from a sample carrier receptacle at an archive facility.
44. The computer readable medium of claim 43 further encoded with data and
- 30 computer executable instructions and further causing an apparatus to transmit control signals to a sample carrier storage device operative to place said sample carrier in said sample carrier receptacle.

45. The computer readable medium of claim 41 further encoded with data and computer executable instructions and further causing an apparatus to transmit control signals to a sample node removal device operative to locate and to remove said selected sample node from said sample carrier.
- 5 46. A system comprising:
- a sample archive;
 - a database containing data records associated with samples stored in said archive;
 - means for receiving a request from a remote client; said request
 - 10 containing information related to selected ones of said samples;
 - a processor responsive to said means for receiving and operative to retrieve selected ones of said data records from said database;
 - a sample retrieval apparatus responsive to said processor and operative to retrieve said selected ones of said samples;
 - 15 a sample preparation apparatus responsive to said processor and operative to prepare said selected ones of said samples for analysis; and
 - means for packaging said selected ones of said samples for shipping to said remote client; wherein said sample retrieval apparatus, said
 - 20 sample preparation apparatus, and said means for packaging are operative at a rate sufficient to retrieve, to prepare, and to package in excess of 100 samples per day.
47. The system of claim 46 further comprising means for conducting a selected analysis with said selected ones of said samples and for providing results of
- 25 said selected analysis to said processor.
48. The system of claim 46 wherein said sample retrieval apparatus comprises an optical sensor.
49. The system of claim 46 wherein said sample retrieval apparatus comprises a laser.
- 30 50. The system of claim 47 wherein said selected analysis is a genomics experiment.

